

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

# PCT

To:

see form PCT/ISA/220

## WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA/220

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
PCT/GB2004/000899

International filing date (day/month/year)  
03.03.2004

Priority date (day/month/year)  
20.06.2003

International Patent Classification (IPC) or both national classification and IPC  
C09D11/00, C09B45/34

Applicant  
AVECIA LIMITED

### 1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☒ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

### 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

*response by 20.4.05*

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

### 3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITYInternational application No.  
PCT/GB2004/000899

IAP8 Rec'd PCT/PTO 06 DEC 2005

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**Box No. I Basis of the opinion**

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1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
  - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:
    - ☐ a sequence listing
    - ☐ table(s) related to the sequence listing
  - b. format of material:
    - ☐ in written format
    - ☐ in computer readable form
  - c. time of filing/furnishing:
    - ☐ contained in the international application as filed.
    - ☐ filed together with the international application in computer readable form.
    - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/GB2004/000899

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**Box No. II Priority**

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1. ☒ The following document has not been furnished:

☒ copy of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(a)).

☐ translation of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

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**Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	1-16
	No: Claims	
Inventive step (IS)	Yes: Claims	1-16
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-16
	No: Claims	

2. Citations and explanations

**see separate sheet**

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**Box No. VI Certain documents cited**

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1. Certain published documents (Rules 43*bis*.1 and 70.10)

and / or

2. Non-written disclosures (Rules 43*bis*.1 and 70.9)

**see form 210**

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING  
AUTHORITY (SEPARATE SHEET)**

PCT/GB2004/000899

**IAP8 Rec'd PCT/PTO 06 DEC 2005**

Re Item V.

Reference is made to the following documents:

D1: EP -A- 0 902 064

D2: DE -A- 3 713 624

D3: US -A- 4 273 706

D4: US -A- 4 207 104

V. The subject matter of claims 1-16 seems to be novel, inventive and industrially applicable vis à vis the disclosed prior art.

V.1. D1 discloses a 4-hydroxy-3-(2'-pyridylazo)-1-(sulfo substituted) naphthalene magenta dye ligand, said dye ligand coordinating a polyvalent metal ion and an ink vehicle. Therefore, the link position of the 2'-pyridylazo group to the 1-naphthol moiety in the monoazo complex ligand is always the 2-position. The remaining challenge of D1 dyes is to further improve the lightfastness of the magenta dyes utilized in ink-jet printing.

V.2. One object of the dye complexes disclosed in D2 (pages 5,10) is to provide a recording liquid having improved light-resistance while retaining satisfactory hue and absorbance. The dye complexes of D2 bearing 2-pyridinyl-azo-naphthol sequences show the azo group linked only in 2-position of the naphthol moiety.

V.3. So do the dyes of D3, which are used for color diffusion transfer photography employing certain nondiffusible azo dye-releasing compounds which, as a function of development of a silver halide emulsion layer, release the diffusible, metallizable azo complex dyes. Highly stable metal complexes of these dyes are formed in an image receiving layer; ink jet ink techniques are not discussed in D3.

V.4. Also the complex dyes of D4 are used in color diffusion transfer photography technique. As in D1-D3, only dye complexes bearing 2-pyridinyl-azo-naphth-1-ol sequences showing the azo group linked in 2-position of the naphthol moiety are proposed.

On pages 13/14 in the description of the current application a comparative dye is prepared which presents example IV (azo link in 2-position of the naphthol ring) of D1, which is regarded being the CPA. In table 1 of page 15, the Ozone and Light fastnesses are documented, in which the results of inks comprising claimed dyes (inks 1 and 2) are shown vis à vis a comparative ink comprising the D1-dye. Indeed the claimed inks show (surprisingly) better fastness properties.

The subject matter of claim 1 is novel and inventive over D1 (as well as D2-D4), because, firstly: a skilled person would not, without the efforts of inventive skill, change the azo link position and the OH-position at the naphthol ring with regard to D1-D4 and, secondly: the comparison test in the current application shows a surprising effect of improvement of a claimed ink to an ink coming close to the claimed ones.

All other independent claims 11-16 refer back to current claim 1 and are novel and inventive, too.